A decorative horizontal bar consisting of a thick black top section and a thinner grey bottom section.

Maintenance Manual for maintenance engineer CX31/41

Thank you for purchasing the Olympus microscope CX31/41.

In order to fully utilize its performance and secure optimum condition, please read this manual before maintenance work.

Please also keep it at hand during maintenance as well as for future reference.

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INTRODUCTION

The purpose of this manual is to satisfy any requirements for maintenance material that maybe considered as necessary to professionals in the maintenance field, such as Maintenance engineer in Hospitals.

It is intended to be used as a tool for performing basic maintenance procedures if needed or when required as per the recommended maintenance schedule.

The sections from this manual only cover procedure pertaining maintenance 's that are considered to be easily performed. For more involved maintenance's or repairs, it is recommended that you contact a qualified service engineer from your local Authorized Olympus dealer.

Maintenance parts, grease, and other items specified in the manual can be ordered from your Authorized Olympus dealer, and subject to change without notice.

The recommended maintenance schedule is shown below as reference. (* Necessary item)

Portion	Cleaning	Optical/mechanical check	Maintenance schedule
Optical components 1) Outer surface Eyepiece, objective, condenser lens, filter, photo eyepiece	*		Once in a year (If dirt is conspicuous or oil immersion objective is used, cleaning should be made after every use.)
2) Inner part Prism, internal lenses	*		Once in a year
Appearance Microscope frame, mechanical part	*		Once in a year (If dirt is conspicuous, cleaning should be made after every use.)
Observation tube		* Optical adjustment: 1) Optical axis (standard) 2) Left/right optical axis 3) Revolving axis 4) Parfocality	Once in a year
Mechanical part Focusing unit, stage, revolving nosepiece, aperture/field iris diaphragm		* Mechanical movement: Grease replacement Mechanical adjustment	Once in two to three years

CONTENTS

CHAPTER 1 MAINTENANCE PROCEDURE	1
1. Maintenance of Microscope.....	1
2. Guide to Maintenance	2
2-1 Overview of maintenance.....	2
2-2 Cleaning method for the optical components.....	3
3. Preparing for Inspection	6
4. CX31/41 Inspection Sheet.....	7
CHAPTER 2 INSPECTION PROCEDURE.....	8
1. Checking Performance of Microscope.....	8
2. Checking Dirty Portion.....	8
2-1 Image influence caused by dirt on each component	8
2-2 How to find dirty portion through observation.....	9
2-3 How to check cleaning condition	10
CHAPTER 3 REPAIR PROCEDURE.....	11
1. Optical Adjustment	11
2. Mechanical Adjustment.....	14
2-1 Preparation for the tension adjustment of Y-wire.....	14
2-2 Adjustment method for the tension of Y-wire.....	15
2-3 Confirmation of the Y-wire tension	15
2-4 Final adjustment.....	16
3. Replacing Grease for Fine Focus Adjustment Knob Ass'y.....	17
4. Electrical Adjustment	18
4-1 CX31/41 wiring diagram.....	18
4-2 Replacing circuit board / rheostat ass'y	18
4-3 Preparation	19
4-4 Voltage adjustments.....	19
CHAPTER 4 JIGS AND TOOLS / GREASES AND ADHESIVES	20
1. List of Jigs and Tools.....	20
2. List of Greases.....	20
3. List of Adhesives	20
CHAPTER 5 MAINTENANCE PARTS	21
1. List of Maintenance Parts.....	21

CHAPTER 1

MAINTENANCE PROCEDURE

1. Maintenance of Microscope

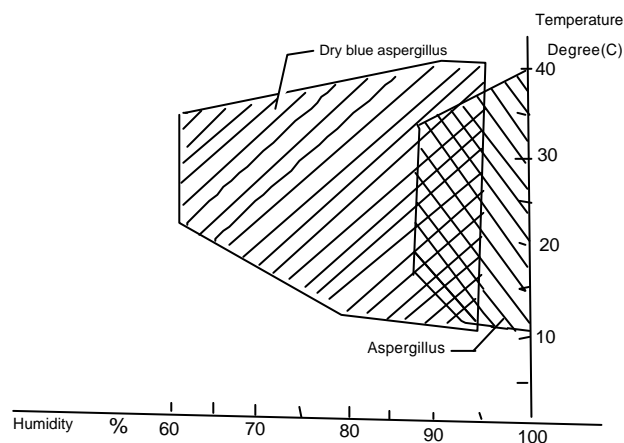
1) Fundamental handling

- Read the instruction manual thoroughly, handle the microscope correctly.
- Be sure to make a usual cleaning, especially after every use of microscope.
- When handling the microscope, do not expose it to shock, moisture, heat and dust.
- If the problem occurs, do not treat it in self-judgement.

2) Using and storing conditions

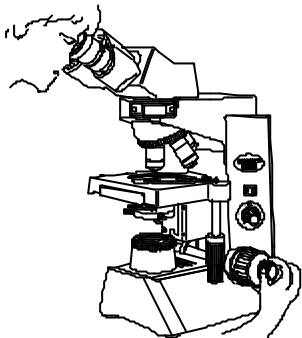
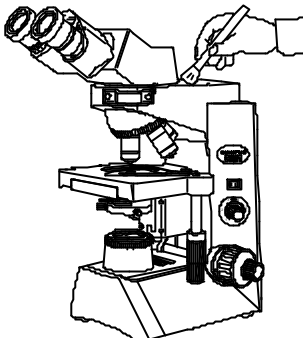
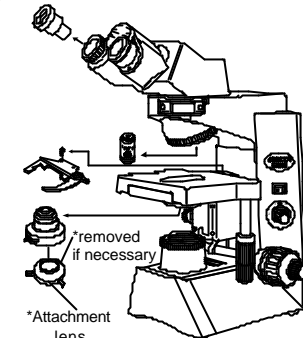
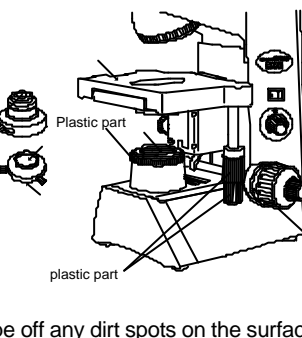
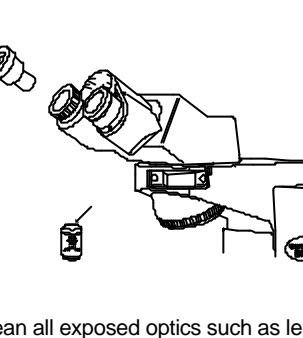
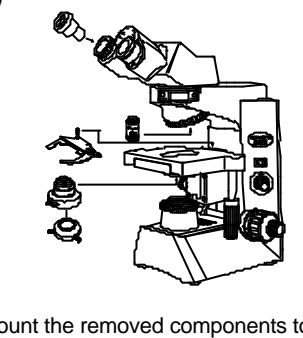
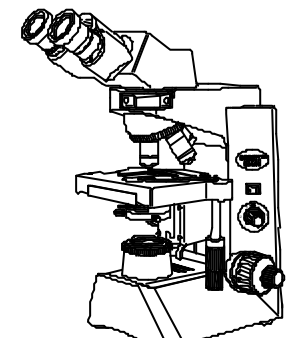
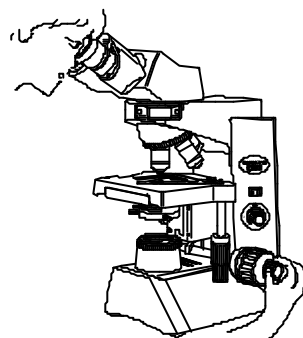
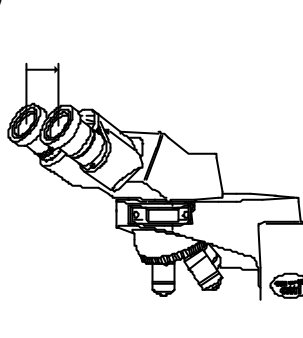

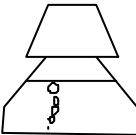
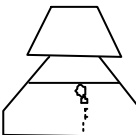



- The microscope should be used under no vibration.
If it is placed in such environment as vibration, this causes disturbance and fatigue in observation and affects the photomicrography.
- It should not be stored in high humidity.
Such condition causes fungus, corrosion on lens and rust on metal part.
Therefore, special caution is exercised if stored in a long period of time.
- Intense temperature change should be avoided.
Be careful not to place the microscope near window exposed to direct sunlight and air conditioner. When bringing it into warm room from cold storage location in winter, condensation occurs on lens and metal part, it causes fungus and rust.
- It should be kept clean.
The microscope is required to keep away from dust that causes contamination, fungus on lens and failure of sliding part in the frame.
Be careful not to place it in the environment where the corrosive chemicals such as hydrogen sulfide, hydrogen fluoride and acid are handled.

<Reference> fungus: occurrence conditions



2. Guide to Maintenance

2-1 Overview of maintenance

<p>1)</p>  <p>Set your correct interpupillary distance. Note any areas suggesting a need for mechanical and/or optical maintenance by operating it or observing a specimen.</p>	<p>2)</p>  <p>Sweep off dust on the outer surfaces with the soft brush. If there are stains on the microscope frame, clean them with neutral detergent.</p>	<p>3)</p>  <p>Remove the optical components and the specimen holder. (The attachment lens is removed from the condenser with the condenser turned upside down.)</p> <p>*removed if necessary</p> <p>*Attachment lens</p>
<p>4)</p>  <p>Wipe off any dirt spots on the surface of lenses, filter, glass and stage. The plastic parts should be cleaned with neutral detergent.</p> <p>Plastic part</p> <p>plastic part</p>	<p>5)</p>  <p>Clean all exposed optics such as lenses of eyepieces and objectives.</p>	<p>6)</p>  <p>Mount the removed components to the microscope frame.</p>
<p>7)</p>  <p>Polish all plastic components and the frame with silicon cloth.</p>	<p>8)</p>  <p>Return the interpupillary distance to original condition and prepare for the inspection. (see page 6)</p>	<p>9)</p>  <p>Do a final check following the inspection sheet in this manual. (See page 7)</p>
<p>Tool required:</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>Lens tissue</p> </div> <div style="text-align: center;">  <p>Neutral detergent (For plastic part or frame)</p> </div> <div style="text-align: center;">  <p>Cleaning solution (For lens or filter etc.)</p> </div> <div style="text-align: center;">  <p>Cotton swab or tweezers etc.</p> </div> <div style="text-align: center;">  <p>Blower</p> </div> <div style="text-align: center;">  <p>Silicon cloth (For finishing)</p> </div> </div>		

2-2 Cleaning method for the optical components

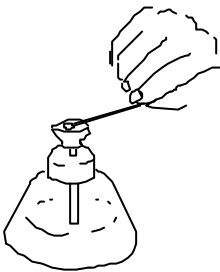
Required tools:

- 1) Lens tissue
- 2) Cotton swab or tweezers etc.
- 3) Blower
- 4) Magnifier (Eyepiece is possible to be used by turning it upside down. Refer to page 10.)
- 5) Cleaning solution: e.g. Alcohol

Before cleaning: Lightly brush the lens surface or blow with the blower before wiping with tissue.
This removes particles that may scratch the lens surface. (to protect the lens coating)

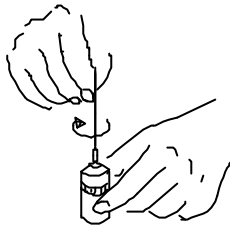
HOW TO CLEAN THE OBJECTIVE LENS

1



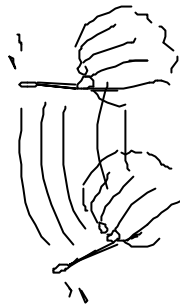
Moisten the tip of cotton swab with cleaning solution.

2



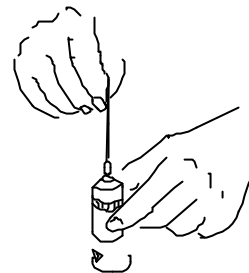
With a circular motion, wipe the top lens surface with the cotton swab, to thoroughly remove any oil or dirt from the lens.

3



Dip a new cotton swab in the cleaning solution and shake vigorously to remove any excess cleaning solution.

4

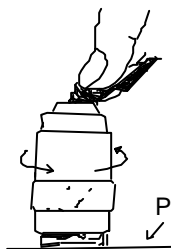


Wipe the objective lens from the center towards the periphery, while rotating the lens.

When the lens size is large and difference in level between the lens and the lens frame is small:

Fold the lens tissue several times and moisten it with cleaning solution.

After that, apply the folded line edge to the center of lens, push it with index finger and turn the objective by the other hand to clean the lens while moving it from the center towards the periphery.



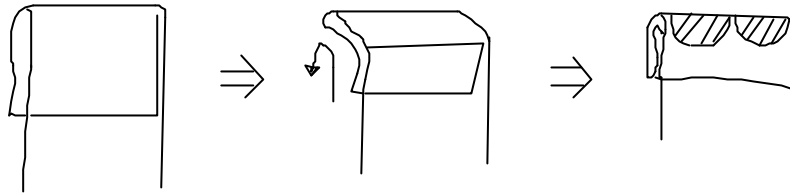
Put it on the desk

Cleaning the immersion objective:

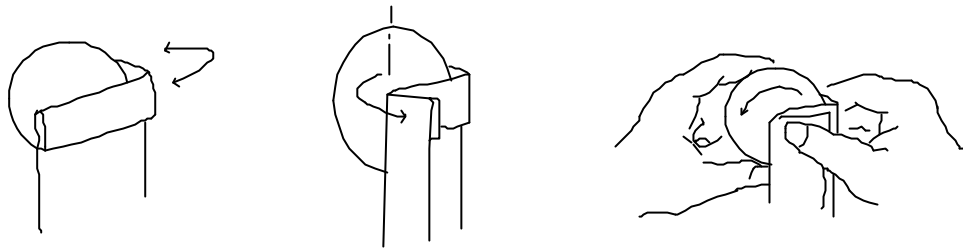
Wipe off the immersion oil while absorbing it with lens tissue that is not moistened. After that, clean the lens as the same manner mentioned on the left. When the top surface of lens frame is higher than that of lens and remained dirty potion on the periphery of lens can not be wiped off, clean the lens referring the above figures, 1 to 4.

HOW TO CLEAN THE FILTER

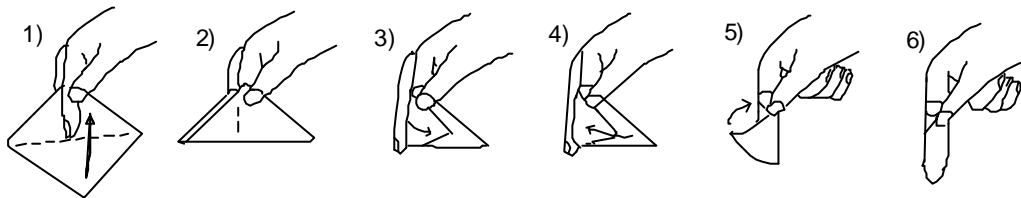
Fold the lens tissue into two or three layers and moisten its shaded part with cleaning solution.



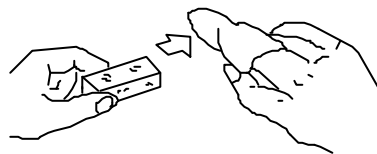
Hold the filter at its edge and fold the lens paper from the lens center to outside as illustrated. Move the lens tissue gradually to outside while turning the filter by left hand.

**HOW TO CLEAN THE PRISM**

Hold a sheet of lens tissue between your middle and index fingers, then fold and wrap it around your index finger. Hold the tissue down with your thumb and moisten it with sufficient cleaning solution.

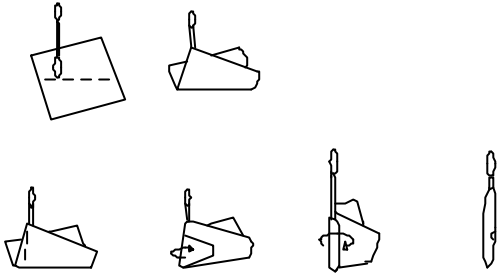


Wipe the prism surfaces from front to backward at a stroke, applying even pressure.



HOW TO CLEAN THE EYEPIECE**1**

Wrap a sheet of lens tissue around a cotton swab as illustrated. If the area to be cleaned is large, wrap the lens tissue looser and thicker. Otherwise, make a thin, tight wrap.

**2**

Dip the wrapped lens tissue in the cleaning solution, and wipe the eyepiece from the center towards the periphery in a circular motion.

**Important notes:**

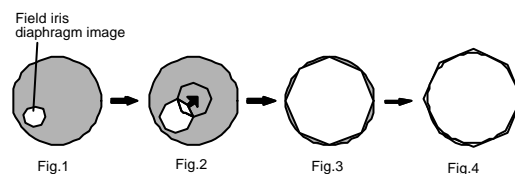
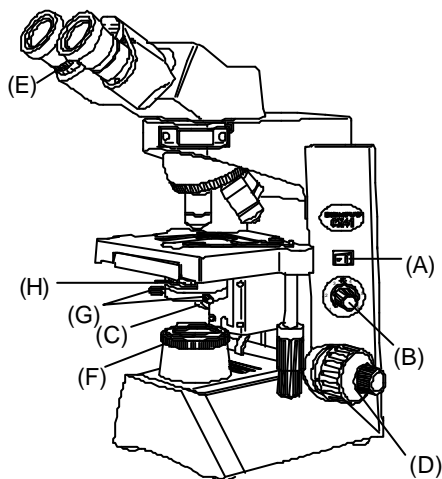
- 1) Never rub the lens surface strongly.
- 2) Do not use the same lens tissue to clean more than one lens .
- 3) Do not moisten the lens tissue with an excessive amount of cleaning solution.
- 4) When cleaning with tweezers, be careful not to protrude its tip from the lens tissue.

3. Preparing for Inspection

ADJUSTMENT OF KOEHLER ILLUMINATION

- 1) Set the main switch "A" to "I" (ON) and adjust the brightness by turning the adjustment knob "B" .
- 2) Place a specimen on the stage.
- 3) Engage the 10X objective in the light path.
- 4) Turn the condenser height adjustment knob "C" to raise the condenser to its upper limit.
- 5) Looking through the eyepiece in the right sleeve without the diopter adjustment ring, turn the coarse and fine focus adjustment knobs "D" to bring the specimen into focus.
- 6) Looking through the eyepiece in the left sleeve with the diopter adjustment ring, turn only the diopter adjustment ring "E" to focus on the specimen.
(At this time, adjust the interpupillary distance so that the binocular visions on the left and right fields of view coincide completely.)
- 7) Turn the field iris diaphragm ring "F" counterclockwise so that the iris diaphragm image comes inside the field of view.
- 8) Manipulate the condenser height adjustment knob "C" to focus on the iris diaphragm image.
(See Fig.1)
- 9) Turn the two centering screws "G" of attachment lens to move the iris diaphragm image to the center of field of view. (See Fig. 2)
- 10) Gradually open the field iris diaphragm. The condenser is properly centered if the iris diaphragm image is centered and inscribed in the field of view. (See Fig.3)
(During actual use, open the field iris diaphragm slightly until its image circumscribes the field of view. See Fig.4)

Reference: Since the contrast of microscope specimens is ordinary low, setting the condenser aperture iris diaphragm to between 70% and 80% of the N.A. of the objective in use is usually recommended. If necessary, adjust the ratio by removing the eyepiece and looking into the eyepiece sleeve while adjusting the aperture iris diaphragm ring "H".



4. CX31/41 Inspection Sheet

Model :		Check Date :	
S/N :		Checking by:	
Check Point	Check Contents	Result	Ref. Page
1. Electrical unit	1) When the power switch is turned on, the lamp is lit and the brightness can be varied by adjustment knob.	OK / NO	18, 19
2. Coarse/fine focus adjustment knob	1) The coarse/fine focus adjustment knob is smoothly moved without any stress or unevenness.	OK / NO	17
	2) The tension of coarse focus adjustment knob can be adjusted by the adjustment ring.	OK / NO	
	3) CX31: The upper limit is changed by turning the ring of stopper on the front upper side. CX41: The coarse upper limit lock is effective.	OK / NO	
3. Stage	1) The stage should not fall spontaneously.	OK / NO	
	2) A specimen is held securely by the specimen holder.	OK / NO	
	3) The X/Y movement is smooth without unevenness, backlash or slipping.	OK / NO	15, 16
4. Observation tube	1) The interpupillary distance adjustment can be operated smoothly in working range.	OK / NO	
	2) When changing the interpupillary distance, the displacement of optical axis is not apparent.	OK / NO	
	3) The diopter adjustment ring is moved smoothly in working range.	OK / NO	
	4) The optical axis of left side coincides with that of right side.	OK / NO	11, 12, 13
	5) CX41: The tilting angle is easily adjusted and its angle is stable. (when the U-TBI3 is used.)	OK / NO	
	6) CX41: When changing the tilting angle, the optical axis displacement is not apparent. (when the U-TBI3 is used.)	OK / NO	
5. Revolving nosepiece	1) The revolving nosepiece can be rotated smoothly and stops at the click position.	OK / NO	
6. Condenser	1) The vertical movement of condenser is smooth.	OK / NO	
	2) The centering of field iris diaphragm can be adjusted with the centering knobs of attachment lens(CX-AL).	OK / NO	
7. Illumination	1) The field/aperture iris diaphragm ring is moved normally.	OK / NO	
8. Visibility (Observation)	1) Observation image is normal. Without flares /ghosts / vignetting /uneven illumination	OK / NO	
	2) When photographed, there is no unevenness or shading on the film surface.	OK / NO	
	3) Dust and dirt are not noticeable in observation or photomicrography.	OK / NO	8, 9
Remarks:			

CHAPTER 2

INSPECTION PROCEDURE

1. Checking Performance of Microscope

Using the CX31/41 inspection sheet (P.7), check the electrical unit, mechanical and optical performance.

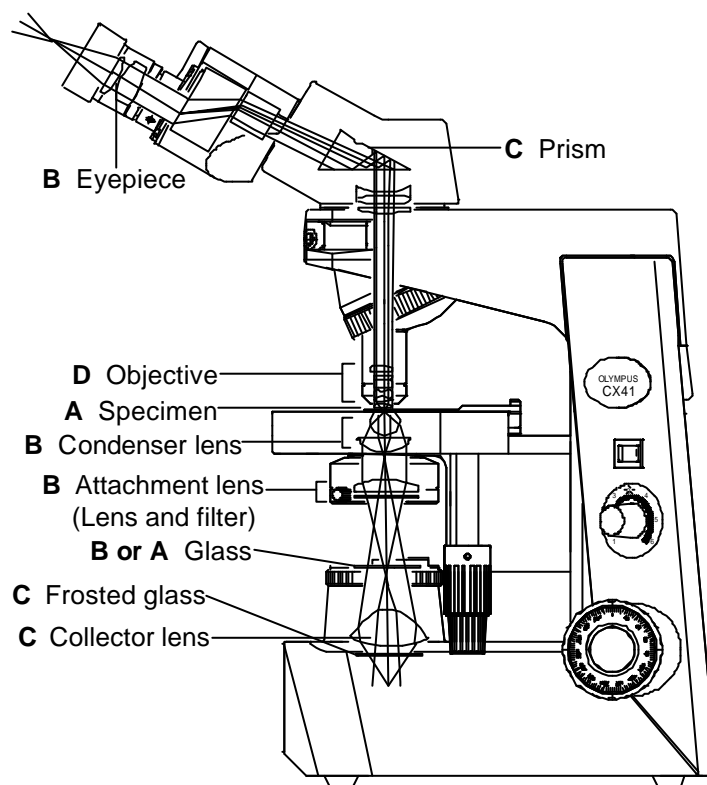
2. Checking Dirty Portion

2-1 Image influence caused by dirt on each component

The following figure shows the influence of image on each optical component if stains or dust is adhered to that portion.

In general, the microscope image or photographing is largely affected by dirt adhered on the nearer portion to a specimen and image surfaces.

Therefore, the optical components should be kept clean and dust-free.



- A:** Dirt is clearly seen.
B: Blurred contours of dirt is seen.
C: Dirt is seen when the aperture iris diaphragm is stopped down.
D: Dirt is not directly seen, but contrast of image deteriorates

2-2 How to find dirty portion through observation

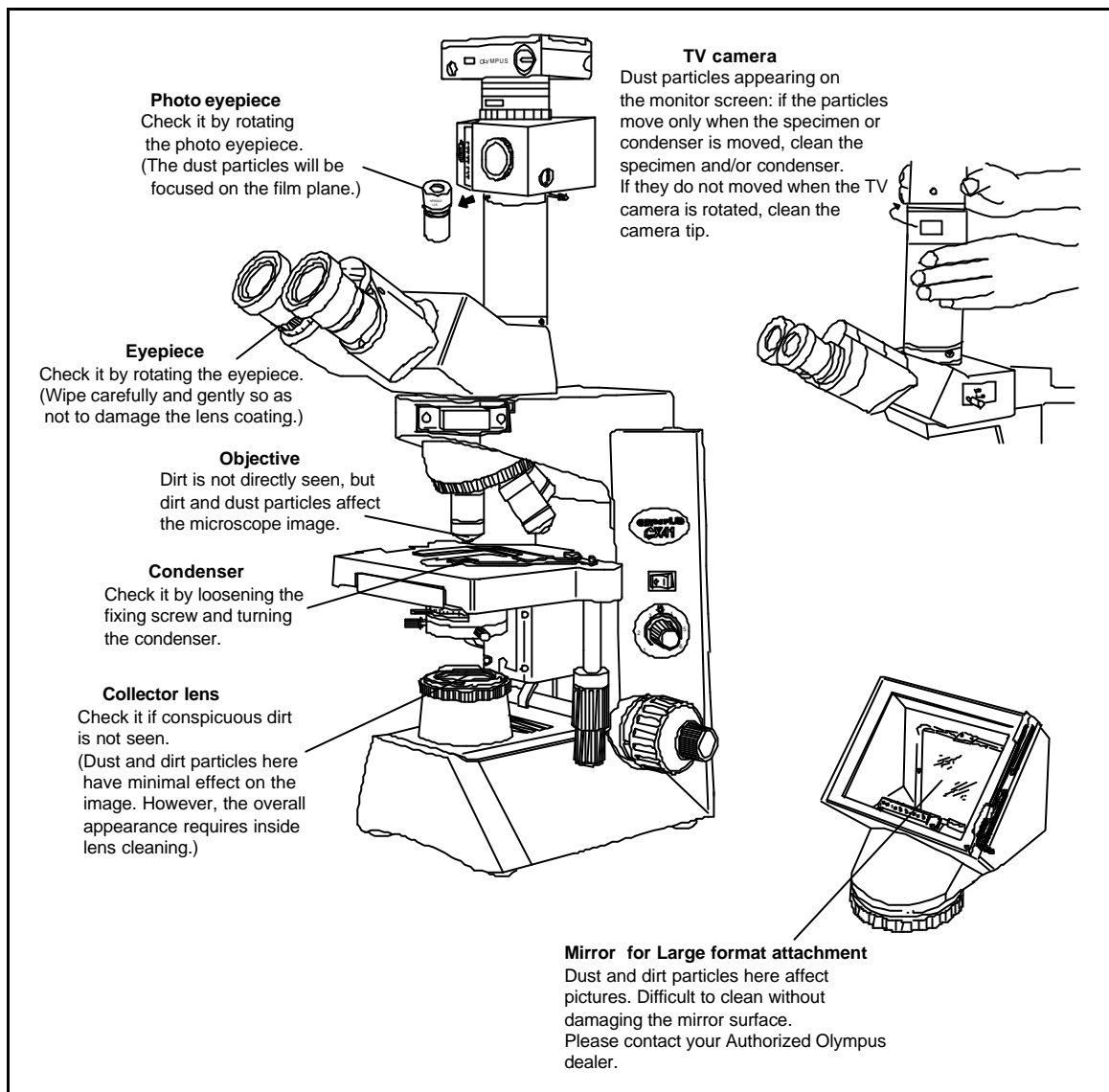
- 1) Close the aperture iris diaphragm.

(When the aperture iris diaphragm is closed, it facilitates finding the dirt particles because the depth of focus increases and the dirt position bring into focus. However, very small dirt particle may not be found in this method.)

- 2) Observe a specimen through the eyepiece.

If dirt is seen by observing it, look for the portion where stains or dust is adhered by moving the following components as well as a specimen.

For TV camera, check it by method shown below.

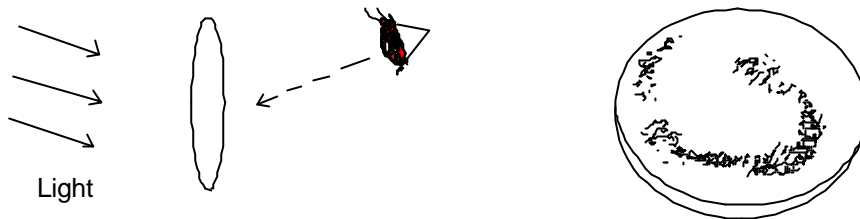


Note: If dirt particles do not move by moving the above components, it is assumed that internal lenses are contaminated.

In this case, please contact your Authorized Olympus dealer.

2-3 How to check cleaning condition

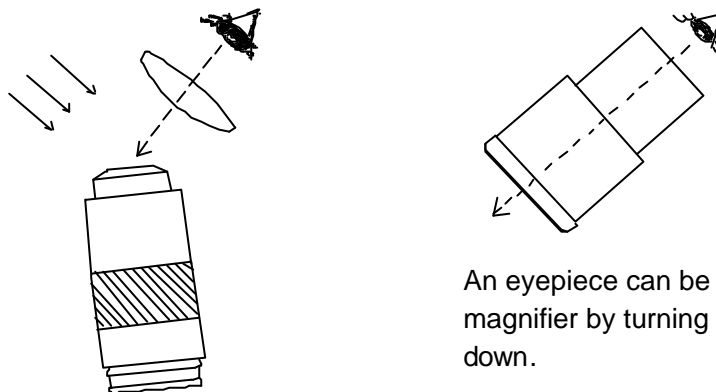
- 1) When a large lens is checked, look at the lens while putting it toward bright side or breathe on the lens and observe the condition that the haze on the whole surface of the lens disappears evenly.



Dust becomes conspicuous when looking at it with the lens inclination changed.

If there is a dirty part or a remained part that is not cleaned completely, the haze of this part will disappear slower than that of the other part.

- 2) For a small lens such as top lens of objective, check it by magnifier.



An eyepiece can be substituted for magnifier by turning the eyepiece upside down.

CHAPTER 3

REPAIR PROCEDURE

1. Optical Adjustment

PREPARATION

Adjusting the left/right optical axis

If the left/right optical axis is remarkably displaced at checking, perform the following adjustment.

*Insert the cross eyepiece into the right sleeve.

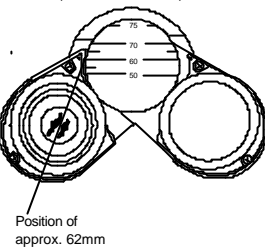
*1 WHB10X

*1 It is necessary to set the cross micrometer disk to the above eyepiece.

Objective 4X-10X

specimen
whose center is
identified
(Concentric circles etc.)

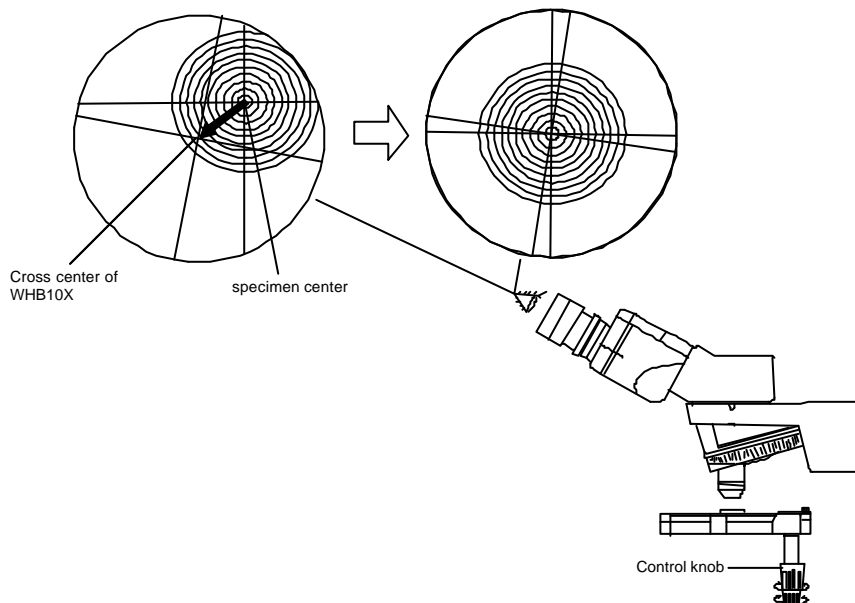
*Adjust the interpupillary distance to about 62mm
(See the illustration)



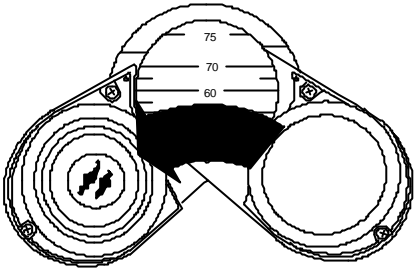
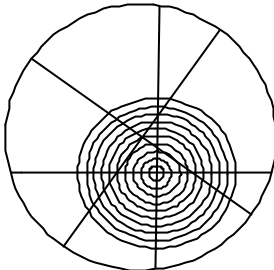
Align the specimen center with the cross center of the WHB10X eyepiece by turning the control knob of the stage.

Before adjustment

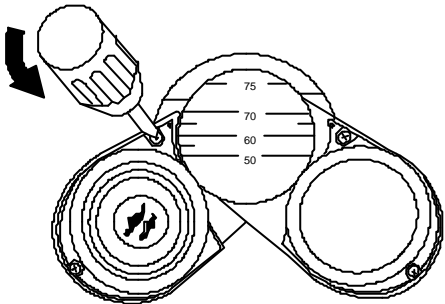
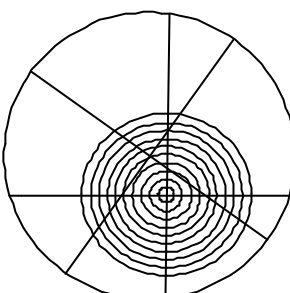
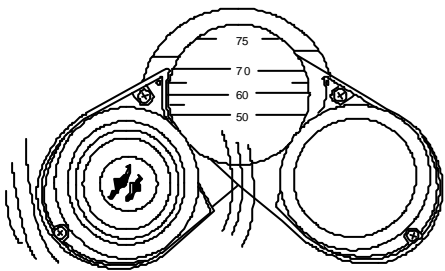
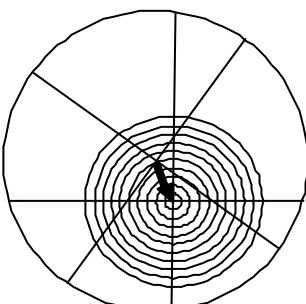
After adjustment



ADJUSTMENT THE LEFT/RIGHT OPTICAL AXIS**(1) Moving the cross eyepiece to the left sleeve**

Work	Image seen through the cross eyepiece
<p>Move the cross eyepiece to the left sleeve.</p> 	<p>If the optical axis between left and right sleeve is deviated, the center of the specimen and the cross center of eyepiece are also deviated.</p> 

(2) Aligning the cross center of eyepiece with the specimen center

Work	Image seen through the cross eyepiece
<p>1. Loosen the two screws slightly which secure the left sleeve.</p> 	<p>Image at first</p> 
<p>2. Align the center of eyepiece with the specimen center while observing through the WHB10X. (Change the left sleeve position by hand.)</p> 	<p>The center is aligned.</p> 

3. Firmly tighten the screws which secure the left sleeve.

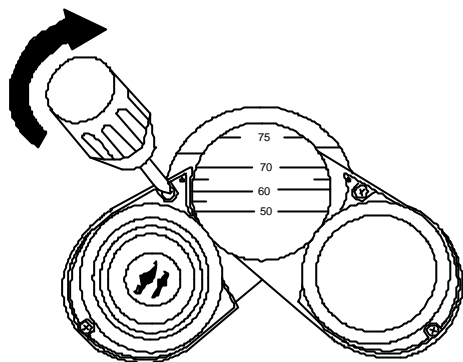
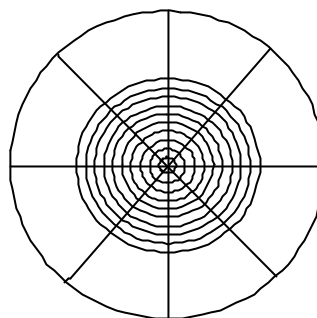


Image at the end of adjustment

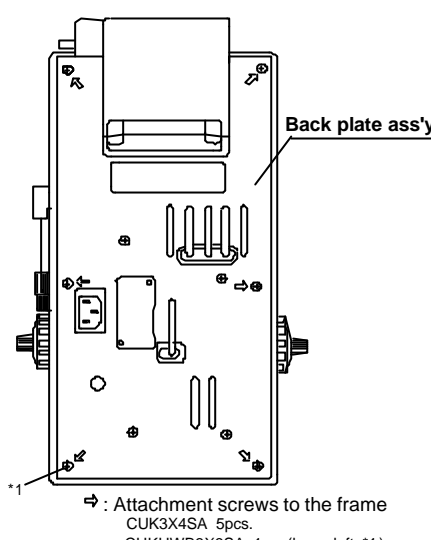
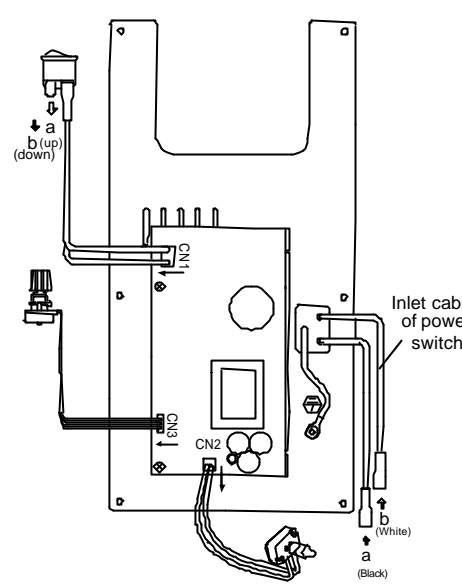
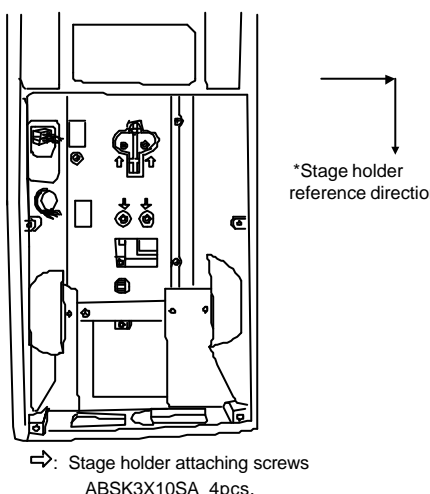
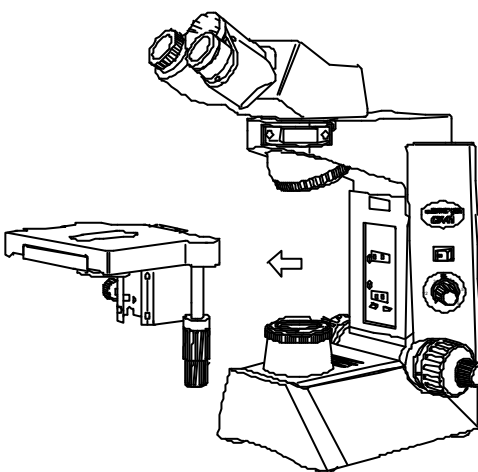


* If this adjustment could not be done, inside mechanism may be damaged.
Please contact your Authorized dealer.

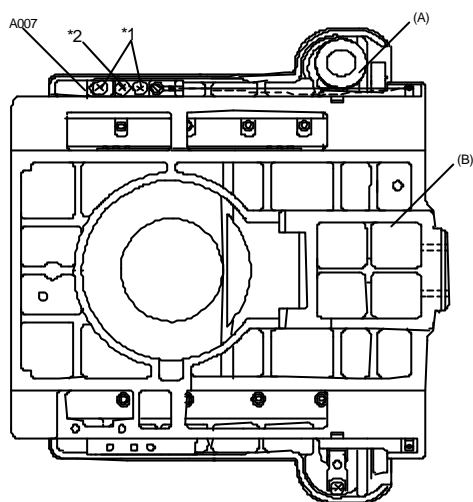
2. Mechanical Adjustment

2-1 Preparation for the tension adjustment of Y-wire

If a specimen image is moved when the stage is brought into the desired position of specimen, it is necessary to adjust the wire tension of stage.

<p>1)</p>  <p>⇒ : Attachment screws to the frame CUK3X4SA 5pcs. CUKHWP3X6SA 1pc. (lower left: *1)</p> <p>Remove the back plate ass'y from the frame. (For the screw positions, refer to the above figure.)</p>	<p>2)</p>  <p>Disconnect the cable connectors from the circuit board (CN1-CN3) and also the inlet cable connectors from the power switch terminals.</p>
<p>3)</p>  <p>⇒ : Stage holder attaching screws ABSK3X10SA 4pcs.</p> <p>Remove the screws on the back inner section and the stage holder. (For the screw positions, refer to the above figure.)</p>	<p>4)</p>  <p>Separate the stage from the frame, turn over the stage and put on the table. (When assembling, install the stage holder while pushing it to the lower right as seen from the rear. *See the left figure.)</p>

2-2 Adjustment method for the tension of Y-wire



- 1) Loosen the screws (*1) securing the holder.

Screws: CUK 3X6SA (*1) 2pcs. (clamping)

- 2) Adjust the tension of the wire by turning the screw (*2) clockwise to tight or counter-clockwise to release.

Screw: CSK3X6SA (*2) 1pc.(adjustment)

- 3) Temporarily tighten the screws (*1).

2-3 Confirmation of the Y-wire tension

- 1) Check that the Y-knob (A) is rotated following the movement of lower stage (B) when moving the lower stage in stroke by a hand.
- 2) After confirming the above condition, Install the stage to the frame , set the microscope at observation state and check that the image is brought into the desired position without backlash (within 2 microns). If it is out of standard, perform the adjustment referring to 2-4 on page16.
- 3) Repeat the above procedures until the condition is satisfied.
After adjustment, tighten the screws (*1) firmly and apply adhesive to three screws (*1, 2).

Adhesive: OT1378 (Solvent-based adhesive)

Note:

- 1) If the wire is too tight, image backlash may occur. If the wire is loose, slip may occur between the knob and wire deteriorating the image movement.
- 2) In case where the stage movement is heavy due to hardening of grease or the X- wire adjustment is necessary, please contact your Authorized Olympus dealer because disassembling the stage is required for grease replacement or that adjustment.

2-4 Final adjustment

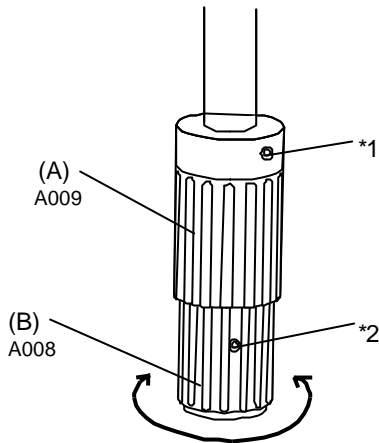


Image backlash adjustment:

1) Under observation state (with 100X objective), move the stage to the desired image position by turning the Y-knob (A). At that stop position, check image backlash. If it is over 2 microns, conduct the following adjustment.

2) When adjusting the Y-movement, loosen the two screws (*1) and turn the Y-knob (A) to bring backlash within 2 microns.

* After turning the knob and temporarily tighten the screws, check image backlash in the observation state. Repeat the adjustment until image backlash is within the standard.

Screws: AWU3X4SA (*1) 2pcs.

3) For the X-movement, check that the backlash can be adjusted by turning the X-knob (B) in the same manner as the Y-knob adjustment.

* If it could not be adjusted, contact your Authorized dealer because X-wire need to be adjusted.

Screws: AWU3X4SA (*2) 2pcs.

3. Replacing Grease for Fine Focus Adjustment Knob Ass'y

If the fine focus adjustment knob is not turned smoothly, replace grease on the shaft of fine focus adjustment ass'y in the following procedure.

(In case where the coarse focus adjustment knob is not turned evenly, please contact your Authorized Olympus dealer because it is necessary to disassemble the coarse focus adjustment knob ass'y and/or guide unit.)

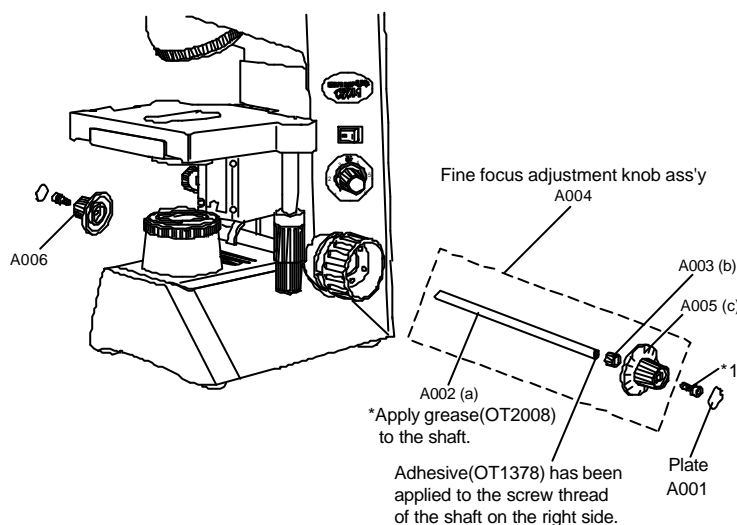
- 1) Peel off the plates on the left and right sides of fine focus adjustment knob.
Insert Allen wrenches (2.5mm) into the both side screws.

Screws: ABS3X8SA 2pcs. (*1)

- 2) Turn the screw (*1) on the right side with Allen wrench while the left side screw is held with it, and pull out the fine focus adjustment knob ass'y.

(At this time, the fine focus adjustment knob ass'y (right) is removed as an assembly of shaft (a), gear (b) and fine focus adjustment knob (c).)

- 3) Confirm that the gear is not damaged. If it is damaged, replace the gear or the fine focus adjustment knob ass'y as a whole.
- 4) Remove grease (OT2008) on the shaft by cleaning solution and replace it.
*When applying the grease, refer to the explanation shown below.
- 5) Assemble the components in reverse order of disassembly.

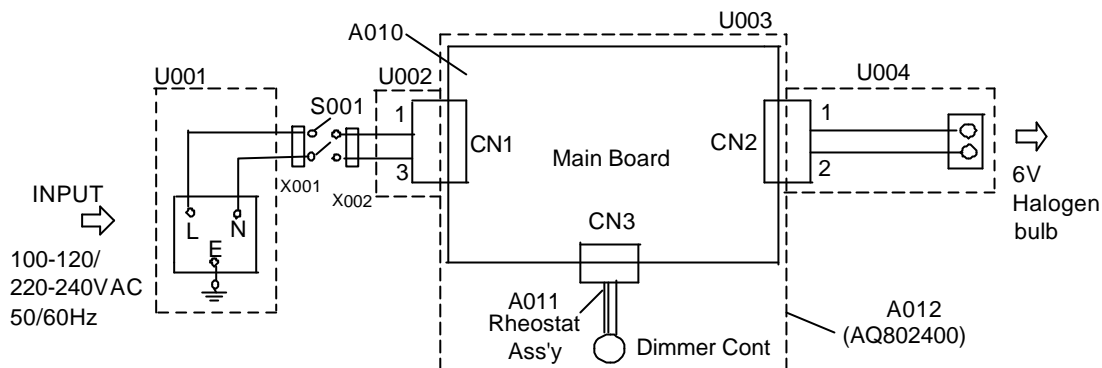


- ★ Applying grease (OT2008) to the shaft (a) of the fine focus adj.knob ass'y and the sliding surface:

Apply grease to the outer surface of the shaft. First, spread the grease by inserting from the left while rotating the fine focus adj. knob ass'y. After removing the fine adj. knob ass'y, place the shaft at the opposite side mouth (to the right). Again apply grease to the shaft and then insert into the right side. Use the lens tissue to wipe away any grease exuding from the left and right.

4. Electrical Adjustment

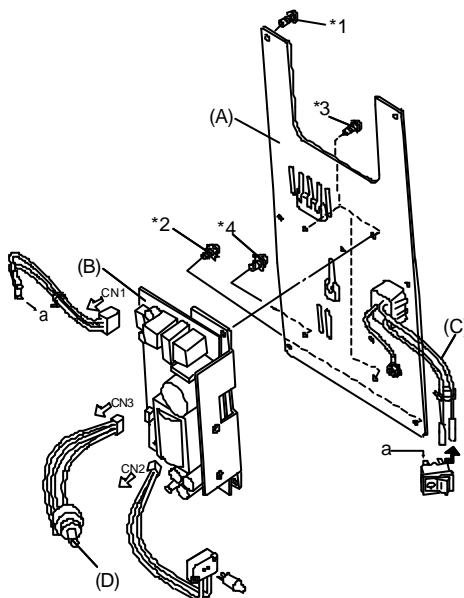
4-1 CX31/41 wiring diagram



★ Voltage Adjustment

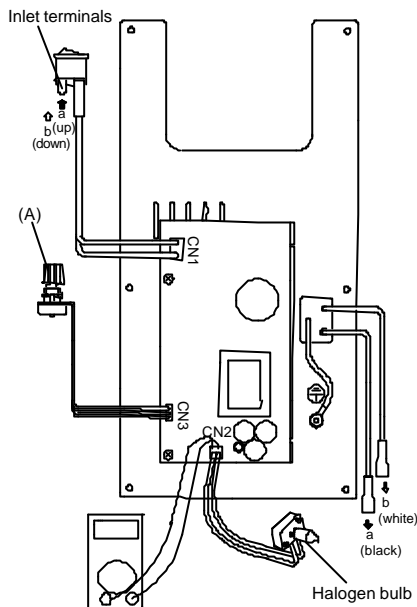
The circuit board ass'y (AQ802400) consists of the circuit board (DZ290300) and rheostat ass'y (DZ290400). In case where the above parts are replaced as AQ802400, the voltage adjustments for the circuit board ass'y are not necessary. However, voltage adjustments are necessary when individually replacing either the circuit board (DZ290300) or rheostat ass'y (DZ290400). The following explains procedures for replacing, preparation and adjustment of the minimum and maximum voltages.

4-2 Replacing circuit board / rheostat ass'y



- 1) Remove the screws securing the BACK PLATE ASS'Y (A).
Screws: CUK3X4SA (*1) 5 pcs.
CUKHWB3X6SA (*2) 1 pc.
- 2) Disconnect the cables from the CIRCUIT BOARD (B) connectors.
CN1: Output side connector
CN2: Lamp connector
CN3: Rheostat ass'y connector
- 3) Disconnect the inlet CABLES (C) from the power switch terminals, and then take off the BACK PLATE ASS'Y (A). (No need to disconnect the "a" connection)
- 4) Remove the CIRCUIT BOARD (B).
Screws: CUK3X4SA (*3) 3 pcs.
CUKHWB3X6SA (*4) 1 pc.
- 5) Replace the CIRCUIT BOARD (B) / RHEOSTAT ASS'Y (D).
(Rheostat ass'y (D): Please contact your Authorized dealer.)

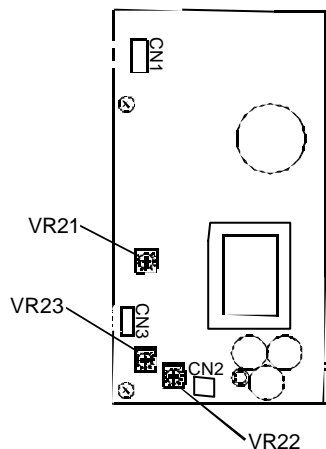
4-3 Preparation



- 1) Connect the cables to each connector (CN1-CN3).
- 2) Connect the cables to the power switch inlet terminals.
Upper side: black Lower side: white
- 3) Set the digital multimeter so that the voltage of the CN2 2-pin can be measured.

★ Use a new Halogen bulb when making voltage adjustment

4-4 Voltage adjustments



- * Do not touch the inlet terminals with power turned on because it could cause an electric shock.
Be sure to turn off power during assembly and reassembly.
- * Do not turn the trimmer VR22 because it is adjusted to the prescribed current value.
(VR22 is set for overcurrent protection.)

Minimum Voltage Adjustment

- 1) Turn ON the power. Turn the light intensity control knob (A) counterclockwise to lower the lamp brightness to its lowest level.
- 2) Rotate the circuit board's trimmer VR21 to adjust so that the lamp output voltage between the CN2's 1 and 2 pins is within the standard shown below using a digital multimeter.

Standard: DC1.10~1.15V
(adjustment target: 1.123V)

Maximum Voltage Adjustment

- 1) Turn ON the power. Turn the light intensity control knob (A) clockwise to increase the lamp brightness to its highest level.
- 2) Rotate the circuit board's trimmer VR23 to adjust so that the lamp output voltage between the CN2's 1 and 2 pins is within the standard shown below using a digital multimeter.

Standard: DC 5.65~5.75V
(adjustment target: 5.70V)

CHAPTER 4

JIGS AND TOOLS / GREASES AND ADHESIVES

1. List of Jigs and Tools

No.	Description	Ref. page
	Cleaning tools	2, 3, 4, 5
*1	WHB10X (It is necessary to set the cross micrometer disk.)	11, 12, 13
	Digital multimeter	19
	Philips screwdriver	12, 13, 14, 15, 18
	Allen screwdriver (2.5mm)	14
	Allen wrench (2mm, 2.5mm)	16, 17
	Precision screwdriver	19
	Dust cover	

*1 Contact your Authorized dealer.

2. List of Greases

No.	Description	Ref. page
OT2008	Grease (medium)	17

3. List of Adhesives

No.	Description	Ref. page
OT1378	Solvent-based adhesive (transparent) (For the fine focus adjustment knob ass'y, use adhesive only when it is disassembled.)	15, 17

CHAPTER 5

MAINTENANCE PARTS

1. List of Maintenance Parts

Index No.	Order No.	Description	Ref. page
	*1	CX31LBSF Instruction manual	
	*1	CX41 Instruction manual	
A001	AD071500	Plate	17
A002	AC732500	Shaft	
A003	AA782600	Gear	
A004	AQ153900	Fine focus adjustment knob ass'y (when replaced as an assembly:)	
A005	AB467500	Fine focus adjustment knob (right)	
A006	AB059300	Fine focus adjustment knob (left)	
A007	AD411200	Holder (for Y-wire)	15
A008	AC888300	X-knob	16
A009	AC888400	Y-knob	
A010	DZ290300	Circuit board	18
A011	DZ290400	Rheostat ass'y	
A012	AQ802400	Circuit board ass'y (when replaced as a set:)	
	*1	6V30W halogen bulb	19

★ The index No. are shown on the figures in "REPAIR PROCEDURE" instead of parts No.

*1 Contact your Authorized dealer.

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